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CEREBRO-SPINAL MENINGITIS AS IT APPEARED AMONG THE
TROOPS STATIONED AT BENTON BARRACKS, MO.

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[Communicated for the Boston Medical and Surgical Journal.]

DURING the past winter, Benton Barracks have been a *rendezvous* for colored troops, and a temporary stopping place for white regiments going home on, and returning from, furlough. Benton Barracks are situated just outside the limits of the city of St. Louis, and in rather an unhealthy or malarious locality. The diseases most prevalent among the troops have been—measles, some cases of typhoid or typho-malarial fever, a large number of cases of pleuro-pneumonia, together with many of *cerebro-spinal meningitis*. The latter disease appeared first among the colored troops. Not less than fifty cases occurred among them during the months of January and February, more than half of which proved fatal. Latterly quite a number of cases have occurred among the white troops—the symptoms and progress of the disease not differing materially from that among the negroes.

At first the patient has a slight chill, a white tongue, a small, rapid pulse, a dull headache, with pain in back and limbs. These symptoms will continue from two to eight days, the patient all the while attending to his ordinary duties, or, perhaps, exhibiting a kind of lazy indifference. The appetite is very slightly affected. After remaining in the above condition for a shorter or longer time, the patient is suddenly attacked with a severe congestive chill, or collapse, becoming immediately helpless; falling down, perhaps, while in quarters or on drill, and very soon becoming comatose or wild with delirium. The surface is cold, pulse small or imperceptible, and the muscles of the back and neck spasmodically contracted, drawing the head back, with more or less rigidity of the muscles of the legs and arms. Deglutition is difficult or impossible, and death soon closes the scene. Or, perhaps, after remaining in this cold, delirious or

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comatose condition from twelve to forty-eight hours, reaction begins to take place, warmth returns to the surface, consciousness is partially restored, and with a longer or shorter period of fever, of a typho-malarial type, lasting from two to four weeks, the patient recovers, or again becomes comatose and dies. During the fever following the period of collapse, nearly all the cases have been attended with delirium, sometimes of a wild and incoherent nature, but more frequently of a comparatively mild form; the patient, when spoken to, answering questions rationally, but, when left alone, immediately beginning to talk incoherently.

I have already published, in the *St. Louis Medical and Surgical Journal*, several cases that have occurred among the negro troops, together with some general observations respecting the nature of the disease. I now offer for your consideration the following cases, which have occurred among the white troops at this post, and which will, I believe, give a correct idea of the symptoms and progress of this disease, and the morbid appearances observed after death. And here I will state, that these morbid appearances have been remarkably uniform, all the cases examined (not less than twenty in number) having shown inflammation of the *meninges*, with deposits of lymph, or pus, or both, upon the arachnoid membrane of the brain, and spinal cord, together with the effusion of serum into the arachnoid cavity, and more or less softening of the white and gray substance of the brain and spinal cord.

CASE I.—William H. Allen, Co. B, 12th Mo. Cavalry, aged 18, admitted into hospital April 11th, and died April 20th. He was of small stature and delicate constitution. Had measles in the early part of the winter, and in fact has been in hospital the greater part of the time since his enlistment, until within three or four weeks. He was brought to hospital on a stretcher on the 11th of April, having been sick two days in quarters, during the greater portion of which time he was delirious. A comrade said that on the day he was taken sick he had drunk six bottles of ginger-pop, and had eaten heartily of trash purchased from a sutler. When admitted into hospital, he complained of pain in his head, back, neck, and throat. Action of the heart irregular; expression of countenance wild; mind at first tolerably rational, but in the course of two or three hours he became delirious, and talked incessantly, exclaiming—"Orderly, let me alone, I can't drill to-day," and various other incoherent expressions, giving no attention when spoken to, or heed to those about him. The muscles of the head and neck were spasmodically contracted, the head being drawn back. He was very restless, rising from the bed frequently, and walking across the ward with a wild, vacant stare, strongly reminding one of a person in a state of somnambulism. While in bed, his eyes were turned upward. Requires a nurse to keep him in bed.

April 12th.—Pulse quite regular and normal; hoarse; expecto-

rates freely; restless. Has involuntary discharges of feces and urine.

13th.—Deglutition difficult; restless; involuntary discharge of urine; answers questions rationally.

14th.—Restless; does not sleep. Answers questions rationally when spoken to, but immediately afterwards the mind wanders, and he talks incoherently.

15th.—Complains of pain in legs; endeavors to get out of bed; has involuntary discharges of feces and urine; constantly whispering.

16th.—Head drawn back at nearly right angles with body.

18th.—Contraction of the muscles of the back and neck; less restless; attempts to get out of bed every few minutes; deglutition performed with less difficulty; respiration hurried; mind rational. On inhaling chloroform, his head could be moved forward on a line with his body, but respiration was arrested.

19th.—Rested quite well for two hours. Has less contraction of the muscles of the neck; called for the urinal; no involuntary discharges. During the day he got worse, and became very restless. Pulse 160; respiration 60. Answers questions rationally; deglutition difficult; takes but little nourishment, and grinds his teeth constantly.

20th.—Rested well until midnight. He then became very restless, and continued so until two hours previous to his death, which occurred at 5 o'clock, A.M.

Autopsy, seven hours after death. Vessels of scalp quite empty. On removing calvaria, found vessels of dura mater highly injected. Arachnoid cavity contained one ounce and a half of serum. Pia mater highly injected. Arachnoid covered with lymph; in spots, with pus. A large amount of pus was deposited on the medulla oblongata and pons Varolii. Gray and white substance of brain congested and softened. Lateral ventricles each contained half an ounce of sero-purulent fluid. Choroid plexus injected. Medulla oblongata, pons Varolii, and cerebellum congested and softened. Whole inferior surface of medulla oblongata and pons Varolii, as far forwards as the pituitary body, covered with lymph and pus. On opening the spinal cord, found meninges highly injected, and containing quite an amount of sero-purulent fluid. Arachnoid membrane covered with considerable lymph and pus from the seventh cervical vertebra to the sacrum. The cervical portion of the spinal cord free from lymph and pus, although the meninges were very much injected. The largest amount of pus was found in the lumbar region. On opening the thoracic and abdominal cavities, found both lungs considerably congested, and the mucous membrane of the stomach quite dark and softened.

CASE II.—James F. Johnson, Co. H, 13th Ill. Cavalry, admitted April 13th; died April 17th. Quite youthful in appearance, proba-

bly not more than fifteen years of age. Has a small and delicate frame. Had been puny and quite unwell for a month. When admitted into hospital, he was in a state of complete collapse; insensible; pulse small and frequent. On inquiry, it was ascertained that he had been sick in quarters two days, and that, on the day previous to the attack, he had eaten one can of strawberries, thirty-five cents worth of apples, and a box of sardines. The following evening he had spasms, vomited freely, and threw up with the ingesta five large lumbrici. He was treated in quarters for two days by the regimental surgeon, who gave him active cathartics. During this time he was delirious, and had occasional spasms. When admitted to hospital, he had contraction of the muscles of the back and neck, extreme sensibility of the surface, and constant delirium. He continued to decline until April 17th, when death ensued.

Autopsy.—On removing calvaria, found dura mater highly injected. Arachnoid cavity contained half an ounce of serum. Arachnoid covered with lymph and pus, which followed the course of the large cerebral veins and sulci. Gray and white substance of brain congested and softened. Right and left ventricles contained half an ounce of sero-purulent fluid. Choroid plexus highly injected, and covered with lymph and pus. Third and fourth ventricles each contained half a drachm of sero-purulent fluid. Medulla oblongata, pons Varolii and cerebellum congested, softened and covered with lymph and pus; the largest amount found in the lumbar region. On laying open the thoracic and abdominal cavities, found old and firm adhesions, covering whole of right and left pleural surfaces. Both lungs somewhat congested. Found nineteen large lumbrici in stomach and large and small intestines.

CASE III.—Geo. W. Basinger, Co. F, 12th Mo. Cav., admitted to Hospital March 19th, having had a chill the day previous. When admitted, complained of pain between shoulders, which continued to increase in severity until the 21st, when he was taken with a severe congestive chill or collapse, and soon became insensible. The muscles of the back and neck spasmodically contracted. This period of collapse lasted three days; the surface cold, pulse small, frequent and thread-like. Deglutition was difficult, and there was involuntary discharge of feces and urine. On the third day after collapse, reaction began to take place; warmth returned to the surface, the pulse became fuller and slower, he became conscious, and complained of pain in head and back. At this time the entire surface of the body, with the exception of the arms and face, was extremely sensitive, and could not be touched without producing pain. From this time he had a fever of a typho-malarial type, which lasted for three weeks, without any material change except a gradual improvement. At the present time, April 20th, he is convalescent, and is in a fair way for

recovery. He has weakness of the back, with slight paralytic symptoms affecting the lower extremities, but not to such an extent as to prevent him from walking about the wards.

Treatment.—In the first two cases given above, the treatment was mainly by active cathartics in the early stage, with blisters to the nape of the neck, and, in the case of Allen, inhalation of chloroform. The last case was treated with stimulants and tonics, quinine and capsicum, which produced decidedly beneficial effects.

General Observations.—There has been a good opportunity to observe the symptoms and progress of this fatal malady, as it has appeared at this post, and I have watched it with a good deal of interest and considerable care. In what respects, if any, it differs from the same disease in other localities, I am unable to state, having never seen or treated any cases of it elsewhere. It is my opinion that local miasmatic influences, if not its sole originating cause, have had much to do in producing it. It is unquestionably, I think, of an asthenic type, and I believe that the same opinion is entertained by the surgeons on duty at this post who have had the most experience in treating it. At first, surgeons were inclined to adopt active antiphlogistic remedies, but lack of success, and more mature reflection, have induced most of them to abandon such remedies, and to depend upon stimulants, tonics, iodide of potassium and opium, together with cups, sinapisms and blisters to the spine. Opium has certainly exerted a good influence in controlling delirium. I have been led to believe that the administration of quinine, freely given in the early stages of the disease, prior to the period of collapse, will in very many instances arrest it. Whether quinine exerts a specific influence over the disease, or merely removes one of its predisposing causes—viz., malaria—I am unable to determine, as my experience in treating it has been confined to cases occurring in this locality, in which malaria abounds.

St. Louis, Mo., April 20th, 1864.

OUR NATIVE MATERIA MEDICA.

[Concluded from page 302.]

THE class of Lenitives is abundantly represented in our native materia medica. Whether we desire diluents, emollients, or demulcents, we have a large variety to select from. Perhaps a good substitute for gums Arabic and tragacanth might be found in the so-called British gum, or roasted starch. Collodion, too, would be missed by many, but other vegetable fibres, as fibrilia, might prove equal to cotton for its manufacture. It would seem, at first thought, that olive oil had become almost a necessity; but we may become better satisfied with our own productions, on learning that a large proportion of what we import, under the name of Florence oil, Bordeaux

oil, &c., has been previously exported from Boston or New York under the more humble designation of lard oil. It is probable that, under the pressure of necessity, we could perform the processes of clarification nearly as well as the French.

In the list of Astringents we find but few which we are not in the habit of importing, for commercial reasons. Of the mineral astringents, in particular, we have hitherto drawn but a small portion of our supply from native sources. Yet, if commerce were impeded, we see that an adequate supply of every one of them is to be found in New England. The leading vegetable astringent, tannic acid, we usually manufacture from imported nutgalls. It can probably be made, however, at a somewhat increased expense, from oak bark or native galls. Catechu, kino and krameria differ from any indigenous astringent, in containing a form of tannic acid, which is not convertible into gallic acid. Whether this is an important or advantageous difference, is yet to be learned. The majority of the important mineral astringents require for their manufacture sulphuric acid, which, in this country, is usually made from sulphur by a process of combustion. Free sulphur is of rare occurrence in New England. A single locality, at Hinsdale, Mass., is the only spot Prof. Hitchcock can refer to where it is found, even in small quantities. The original process for the manufacture of sulphuric acid, which is said to be still carried on in some parts of Germany, was by the dry distillation of sulphate of iron, whence its popular name, oil of vitriol. Fortunately, sulphate of iron, and the sulphide, from which the salt can be made, occur abundantly in New England. A large deposit of both exists near Worcester, Mass.

The Mineral Irritants we could supply, with hardly an important exception. All the Vegetable Irritants in common use are also either native or easily cultivated. Dr. Harris states that in certain localities of Massachusetts several species of the cantharis abound, whose vesicating powers are hardly inferior to the Spanish fly. If special attention were paid to their food, habits, &c., we could, no doubt, soon obtain an ample supply.

Of the Specific Tonics all are native, with the single, but important exception of cinchona. This it is quite hopeless to attempt to cultivate, and its active principles we cannot, as yet, expect to imitate. In forming our idea of the real value of this drug in New England practice, it must not be forgotten that this region is almost entirely free from diseases of malarial origin. The specific properties of quinia are therefore very rarely called for here, except in cases of disease contracted further South or West, or in foreign countries. For such cases we have good substitutes for quinia in the alkaloids of cornus Florida and salix. We administer quinia, in the vast majority of cases, however, simply as a tonic; and in this case, as in the other, its value is very great. But, since we possess many native tonics, such as prunus virginiana, of decided efficacy,

it seems just to rank quinia as a convenient rather than an essential constituent of our New England Pharmacopœia.

Of the Simple Bitter Tonics in common use not one is native. Quassia, gentian and colombo are at present cheaper and perhaps more convenient than coptis and the other native bitters mentioned by Dr. Bigelow. It is improbable, however, that, therapeutically, the imported drugs are at all superior. Of the Stimulant Tonics our native supply is bountiful.

A prominent position in the class of Tonic and Aromatic Stimulants is held by the group of spices, which are nearly all imported from the tropics. Capsicum we cultivate, and for ginger we can use *asarum*, our wild ginger. The other spices may fairly be considered pharmaceutical luxuries. The majority of the rest of the class are only too abundant; supplying, as they do, the materials for the herb teas with which our rural population are so much inclined to drench themselves on the slightest provocation.

We possess all of the articles on the list of General Stimulants, except *arnica*. This is used mostly as a vulnerary, a little, if at all, as an internal remedy. Though convenient and useful, we can dispense with it without serious disadvantage.

We already furnish our own supplies of the greater number of the drugs classed by Stillé as Narcotics. It unfortunately happens that one of the two exceptions, opium, is really indispensable; the other, *cannabis Indica*, we can do without; for, though undoubtedly possessing valuable therapeutical powers, it is, as yet, comparatively little known and used in the profession. The plant producing the officinal extract grows readily in many countries, and differs little, botanically, from *cannabis sativa*, the source of our hemp. The peculiar resinous substance, in which reside the properties of the drug, is not found in the plant, when growing outside of certain limited regions in Asia. So we may dismiss the hope of adding this to the list of our native productions. But opium we can produce, without doubt. Our supplies of the leaves, flowers and capsules of the poppy are of home growth and good quality. It is well known that several attempts to cultivate the plant for opium have succeeded very well in England—one of the experiments proving quite lucrative. There is no apparent reason why the same success should not be attained in our Southern New England States. Certainly the present would seem to be a favorable time for making the experiment, while opium commands so high a price.

From the group of Antispasmodics would be taken *assafoetida* and camphor, which are extensively used, particularly in domestic practice. There seem to be no native drugs at all adapted to fill their places, though quite a long list would still remain to us.

In the next class, that of Spinants, our native supplies are very deficient. In fact, ergot and *toxicodendron* seem to be our only resources in this department of therapeutics.

Of the important family of Sedatives, general, arterial and nervous, there is hardly a single member which we need to seek beyond the boundaries of New England. The few exceptions appear absolutely insignificant in comparison with those we possess.

Of Errhines our supply is abundant, though the variety is not great. Besides those mentioned in the list, sanguinaria, a widely-diffused native plant, is much used.

Ipecac is the only really important Emetic, with which we cannot supply ourselves, at least, to a considerable extent. At the same time it is so extensively used, that a substitute should be found, if possible. This we have in our native poke, *phytolacca decandra*, of which Dr. Bigelow writes as follows:—"In its medicinal properties the root approaches nearer to *ipécacuanha*, than any other American vegetable I have hitherto examined. From abundant experience, the result of many trials made in dispensary practice, I am satisfied that, when properly prepared, it operates in the same doses, and with the same certainty, as the South American emetic." Dr. George Hayward also reported quite favorably of the drug, after considerable experience. Prof. Clarke, however, regards *phytolacca* as uncertain in its action, and prefers *gillenia*, which also resembles *ipécac* closely. With the two we should be well supplied. The other native vegetable emetics are of decidedly less value. Tartar emetic is noted in the list as being of native origin. This statement needs considerable qualification, for ores of antimony have, as yet, been found in small quantities in New England, the principal deposits being at Carmel, Me., and Cornish, N. H. Even granting that these sources are sufficient for at least a temporary supply of the metallic base, we meet with another difficulty in the fact that tartaric acid is not yet produced in New England, owing to the sweet character of our native wines. The Catawba wines of Ohio are much more tart, and give quite a copious deposit of the crude bi-tartrate of potassa. Perhaps if the same grapes were sufficiently cultivated here, the character of our native wines might alter. Under existing circumstances we should have to use the antimonial in some other form, for instance, the teroxide.

The use of Cathartic medicines is so extensive in this part of the country, that the words purge and physic have become popularly synonymous. Perhaps the diminution of the supply of the more active drugs of this class, such as a blockade of our ports would cause, might really prove a benefit. Senna, rhubarb, colocynth, jalap, scammony, gamboge, aloes and Croton oil would all be cut off. But not a few would be left, which are already well known; while for senna we should have *cassia marylandica*; for rhubarb, *juglans*, called by Prof. Clarke the American rhubarb; and for jalap, *podophyllin*.

Owing probably to the prevalence of pulmonary complaints in this climate, the list of Expectorants has been swelled to a needless,

and perhaps troublesome length. A judicious curtailment of the *Materia Medica* might be of advantage in this, as in many other classes of remedies. Unfortunately the pruning proposed in this essay, cuts away some of the most important branches. Copaiba, the balsams, and squill, would be selected as the first to be retained in an abridged *Pharmacopœia*, and yet they are all of foreign production. It will be seen under "Diuretics," that a possibility exists of introducing the culture of squill. At the worst, we have senega, and one other agent of decided value, though less used by the profession, viz., *asclepias tuberosa*, of whose efficacy Dr. Bigelow speaks in the highest terms.

Of native Diaphoretics our supply is almost endless. A number of the herbs classed as aromatics are largely and successfully used in domestic practice to produce diaphoresis. With the profession, the most frequent prescription for this purpose is probably Dover's powder. For the ipecac in this compound, *phytolacca* has been occasionally substituted with good success. *Gillenia* might also be used.

Although almost all of the class of Diuretics are, or may be, obtained from native sources, yet a few very important ones come from abroad. Squill is considered by many as the most useful diuretic and expectorant. On account of this double application, it would be very desirable to introduce its culture, should there be any prospect of our being cut off from foreign supplies. We raise considerable quantities of garlic, a native of the same countries as squill, and closely related to it botanically. *A priori*, therefore, we might expect some degree of success in the cultivation of the latter. Certainly it seems desirable that the trial should be made, as it would call for but a small expenditure of time, labor or money.

The necessary deprivation of copaiba and cubebs would be severely felt, both by physicians and patients, so extensive is their employment in gonorrhœa. We probably possess a drug of similar powers, viz., *gelsemium*. This has been much used in gonorrhœa in some parts of the country, and with remarkable success, judging from published reports of cases. It is a native of the Southern States, and probably would not thrive in our colder climate. There seems to be some doubt as to the success met with in the cultivation of *colchicum* in this climate. Stillé and Wood both state that small supplies of native production reach the market, but neither speaks in positive terms of the efficacy of the samples, as compared with that obtained from Europe.

Ergot, savin and tansy are probably the most important of the drugs, which have a special direct effect upon the uterus, and they are all native.

The list of Anthelmintics would be considerably reduced, but an ample supply would remain, including *ol. terebinthinæ* and *cucurbita pepo*.

All of the Alteratives, with one important exception, mercury, can be abundantly produced within our own borders. A blockade would materially interfere with our fisheries, but the fishing carried on directly off our coasts would furnish us with enough cod-liver oil to meet our requirements. In place of the fish oils, that from linseed has been largely experimented with at the West. At one time it was believed by some that the vegetable oil was as efficacious as the animal. I am unable to learn of any similar extensive trials in this vicinity. Fusel oil, or amylic alcohol, also, which we can produce in any quantity, is regarded in some quarters as equal, if not superior, to fish oil.

In this vicinity it is now seldom that we see single doses of mercurials prescribed—a course of mercury almost never, except in syphilis. Perhaps in time, it may be deprived of even its present claims as a specific in that disease, by the persevering attacks of Bennett of Edinburgh, and others. We have already seen its use here almost abandoned in iritis, as the result of Dr. Williams's researches. This is not the place, however, to discuss the therapeutic value of mercury. The simple fact remains that not a particle of it has thus far been found in New England.

Of all these classes, we find only one (Spinants) in which we are absolutely deficient; in scarcely another are we really poor.

But let us look at the subject from another stand-point. Dr. Jas. Jackson, in "Another Letter to Young Physicians," has given us the precious results of his extensive and careful research into the practical value of drugs. He specifies those on which he thinks he has most reason to rely. He gives first a list of six; viz., antimony, mercury, opium, cinchona, arsenic and iron. Of these, we have two in abundance: one in small quantities; one could be cultivated to the necessary extent; and the remaining two are and must continue to be imported. A supplementary list of twenty is then given, of which only four or five are necessarily supplied from abroad. Even of these, some might be replaced by native substitutes of almost identical properties. A more modern observer, Trousseau, omits antimony and arsenic from Dr. Jackson's list of six, and adds belladonna. Of the five thus selected, we could supply ourselves with three.

Theoretically, then, New England may be said to possess a *Materia Medica* sufficiently copious both in quantity and variety. There is little doubt that, with ten, or even five years of preparation, the treatment of disease might be, to the full, as efficient and successful as now, and yet not a drug should be brought from beyond the boundaries of the six New England States. One reservation must here be made with regard to mercury, whose specific properties in syphilis may be great, though stoutly denied by some; and from its loss might result more fearful ravages of that foul disease, than we are accustomed to see.

Moreover, in our patriotic pride in the resources of this part of our country, we must not forget that a sudden war with powerful neighbors would find us fearfully unprepared in very important particulars. Let it be our welcome duty, as medical men, to render our country and our state, as far as may be, independent even of the drugs of foreign nations.

TWO CASES IN WHICH SUDDEN DEATH WAS CAUSED BY FATTY DEGENERATION OF THE HEART.

BY ALFRED HOSMER, M.D., OF WATERTOWN, MASS.

[Communicated for the Boston Med. and Surg. Journal.]

THE following cases are not reported because it is thought any additional evidence is needed to prove that fatty degeneration of the heart is an adequate cause of sudden death, for that has become a well authenticated fact in pathology. But it may not be amiss, by repeated illustration, to call the attention of the profession at large to a morbid condition which is distinctly obvious when sought for in a proper manner, but which, with the ordinary means and modes of investigation, is not unlikely to be overlooked. The condition alluded to is interesting, like any discovery which has substituted light for darkness, and replaced obscurity by certainty; and important, because it undoubtedly classifies and explains a certain number of cases the nature of which was formerly imperfectly understood, if not completely misapprehended.

In this connection it may not be out of place to quote from Paget, who says of this affection, "it often introduces unexpected dangers into the ordinary practice of surgery; it is, I believe, not rarely the cause of sudden death after operations." His suggestion that it may be a source of serious danger in anæsthesia, deserves a careful consideration, especially by those who still profess an inexplicable faith in chloroform.

Mrs. H., aged about 42, apparently in robust health, somewhat corpulent, had led a life of unusual activity and industry, although always in comfortable circumstances. The whole history of her previous illness is told by saying that, during the last few years of her life, she repeatedly suffered from attacks of severe pain, produced by gall-stones. On the evening of April 18, 1863, she was confined, her labor being in every respect natural, and not very long. The case progressed satisfactorily until the evening of the ninth day, when the house took fire. The patient displayed her usual perfect self-control, betraying no fright or agitation, rose from her bed, walked down stairs and out of the house. A short distance from the door, she was taken up and carried to the house of a near neighbor, where I saw her soon after. Convalescence seemed not in the least to be interrupted by what had happened, and on the fourteenth day she

returned to her own house. The twenty-second day she went to ride, with apparent benefit. About this time, as I afterwards learned, she complained somewhat of a general feeling of lassitude, and want of her accustomed energy. The twenty-third day she had the first attack of palpitation, which produced great discomfort for the time being, but soon ceased. The following day she rode to Boston, and made considerable effort without inconvenience. The twenty-fifth day the palpitation returned with increased violence, but subsided in the course of a few hours. I was sent for the twenty-sixth day in the evening, and found her suffering very much from the condition of the heart, the action of which, though regular, was extremely rapid, the pulse numbering upwards of 130. The impulse was rather feeble, but both sounds were distinctly audible, and unmodified by any bellows murmur. The dyspnoea was considerable. The next morning I found an improved, but not a natural state of things. The following (twenty-eighth) day she considered herself much better, and, of her own accord, took a ride, in the course of which I met her. That night at eleven o'clock she was compelled by dyspnoea to rise from her bed, and to pass a very uncomfortable night in a chair. After daylight, however, she went to bed, and with her head and shoulders raised high upon pillows, managed to get some refreshing sleep. She then rose and took some breakfast. Between ten and eleven o'clock, violent palpitation and great dyspnoea came on suddenly, and continued to increase rapidly for the space of fifteen minutes, when the patient died.

An autopsy was made six hours *post mortem*. In the gross appearances of the organs there was nothing found which would explain the fatal termination. The kidneys, on section, emitted a peculiarly strong, disagreeable urinous odor.

Upon examining the muscular tissue of the heart under the microscope, a piece being taken from the wall of the left ventricle, I found that while in some places the striated appearance could be seen without difficulty, the striæ were for the most part either very faintly indicated or completely obliterated. Within the fibrillæ I found the unmistakable molecules of fat, but they were not remarkably numerous. In the tissue of the kidneys I also found molecules of fat quite as abundant as in that of the heart.

The subject of the second case was Miss Sarah A. Leonard, the circumstances of whose death at the Massasoit House in Springfield, Mass., were published at length in the newspapers. Miss L. could hardly be called fleshy or corpulent, but was very far from being of a spare habit; her age was 42. I am informed by the physician under whose care she was at that time, that four years since, she was suffering greatly from palpitation and dyspnoea; that at times slight exertion would so exaggerate her symptoms that her family thought she must die immediately. To what extent she had been afflicted with cardiac symptoms since the period named, I do not know, but

have good reason to suppose that she was not entirely free from them.

She was found dead in her room, April 20th, 1864; the autopsy was made three days after. The three cavities were carefully examined, but without any satisfactory result derived from gross appearances. To justify her character against any suspicion of suicide, and to eliminate entirely all question of poison, her friends caused the contents of the stomach to be examined by a professional chemist, whose report established a negative, as was expected.

I examined with the microscope various portions of the walls of the two ventricles, and everywhere found the same appearances. The parallel outlines of the fibrillæ were easily made out, but the striæ had everywhere disappeared completely. Within the fibrillæ molecules of fat almost innumerable were seen, while external to them globules of fat existed in great abundance.

ON THE DECORTICATION OF CEREALS.

WHAT is understood by the decortication of grain? It is a system by which the exterior envelope is taken off, so that there remains only the kernel of flour; in other words, decortication does to the grain what most persons do to fine fruit before eating, namely, they peel it, in order that the bitterness or coarseness of the skin may not diminish the flavor and goodness of that which is within.

Thus, decorticated grain is without the bitterness which the skin communicates, whether it be for making bread or for distillation; in fact, any one who has not tasted bread made from decorticated corn does not know the natural taste of wheat flour.

Corn is the most valuable of the farinaceous foods of man, and it is important to know if the flour of old corn can be improved by decortication. Look, then, to the structure of a grain of corn, beginning from the outside. We find a gummy and resinous pellicle in order to protect the grain, at the same time not stopping the power of absorption, and it is easy to understand that this pellicle easily gets discolored and charged with dust that must impart a bad taste; after this pellicle there is a thinner skin, distilling the air and nourishing the kernel, as through a thin veil. There is a third envelope, formed of impalpable dust, which acts as a sponge, absorbing the damp and stopping putrefaction, and giving a longer life to the kernel. These three envelopes form the brans, and under these three there is a thin skin, called in science "testa." This skin sticks to the floury kernel, and surrounds it like a cuirass, and the object of the decorticator is to take off this cuirass, and strip it completely without injuring it.

After the testa we come to the germ of the grain, which surrounds the kernel like a crown, enlarging it towards the embryo. This is

the flour *par excellence*. Then come the particles the most glutinous, then the centre.

One can understand that in completely taking off the three brans of old wheat, or of Egyptian wheat, before grinding, the flour will necessarily be better. If the three brans be preserved separately, the inner one will be found in the form of a fine, black, bitter, bad-smelling dust.

What advantages, then, are to be obtained by decortication? The answer is, 10 per cent. increase in quantity of flour (at least upon wheat), and from 12 to 15 per cent. in barley and oats, and at the same time a finer color and a better taste. The next question which arises is, "Ought the grinding of decorticated grain to be done in the same manner as undecorticated grain?" The answer is, "No." Having shown that the finest flour for taste and nourishment adheres to the skin, the grain must be pulverized to detach this flour from its envelope. You must then grind as fine as possible, so as not to heat the flour, then dress through a dressing machine, of which the coarsest silk will not let through more than the third or fourth degree of fineness—thus you will obtain 80 per cent. of the weight of corn; then you will either regrind or redress the remainder, so as to have 90 parts of flour from 100 parts of the corn decorticated. The 90 parts of flour will make a delicious and nourishing bread.

As to decortication in a hygienic point of view, the flour of decorticated corn at 90 per cent. is more nutritious than ordinarily ground corn at 78 or 80. All the chemists (in France) who have analyzed and compared flour from decorticated and undecorticated corn, find 5 and 6 per cent. more gluten in the former than in the latter. The formation of the grain shows us that it must be so. In grinding undecorticated grain, to prevent the third bran from spoiling the color of the flour, the stones are put so far apart that a large portion of the flour is suffered to escape in the brans, and we have seen that the exterior flour is richest in gluten and in phosphoric principles.

As in the ordinary millering, the greater part of this excellent flour is left in the bran, so flour from undecorticated corn extracting 78 to 80 per cent. of the weight of the corn, is inferior in nourishment and in flavor to the flour of decorticated corn extracting 90 per cent. of the natural weight of the corn.

As regards the several qualities of bread, the decortication does not affect the different qualities that exist in the flour; the compartments of the dressing machine divide it, and one can always have bread more or less white according as the first, second, or third flours are more or less mixed. The quality of the first will be incomparable, but what is gained in whiteness is lost in taste and nourishment. Thus, we say, the first flour will only be used for pastry and very fine bread—it will be excluded from the table where bread is the principal food—and will be only used at the table of the luxurious.

It is better to make a quality with all flours united, making a wholesome and well-flavored bread; and experience has proved that young people, more especially, fed with this bread will have a strong and vigorous constitution, instead of the lymphatic blood produced by the white and tasteless bread in common use.

In order to obtain this complete decortication, the principle adopted by M. Poissant (the pioneer of this system) is that of causing a continuous rubbing of grain against grain by means of a well-devised machine—the result of many years' toil, but which it is hardly possible to describe here. Suffice it to say that it consists of two sets of revolving blades, driven at 100 or 400 revolutions per minute, which causes the grains to come into contact with each other in such a manner as to create a speedy expansion and separation of the skin, and as each skin is loosened, so is it driven off at stated and fixed periods by an arrangement of fanning.

It is necessary to observe that the grain, previous to decorticating, is immersed for a second or two in cold water, and allowed to drain for four or five minutes before it is put into the hopper of the machine. The next step before grinding is to take care that the grain is thoroughly dried, which is easily accomplished by rapid currents of heated air meeting the grain as it passes from the machine, it being observed that the moisture, through its immersion, is exceedingly slight, and altogether superficial.

It is a matter of singular yet great importance to know that corn and other cereals decorticated are not likely to be attacked by that destructive insect the weevil, that is, if the decorticated corn is carefully excluded from sunshine. Thus to preserve decorticated corn, after it is properly dried, it should be put into barrels, or stored in close and air-tight granaries, where it will be found to keep for an indefinite period.

By way of recapitulation it may be stated:—

1st. That decorticated grain will always be profitable to the world, as it incontestably yields 10 to 12 per cent. more flour than ordinary millering.

2d. It can be done in either small or large quantities, and not only produces from 10 to 12 per cent. more flour, but at the same time from 5 to 6 per cent. more glutinous nourishment.

3d. Its non-susceptibility of attack from the weevil, and therefore its fitness for storing against periodical seasons of scarcity.

Lastly. The machines are simple, cheap, lasting, and capable of being worked either by hand or motive power at small cost, and have, in fact, no known drawbacks, except that pollard bran, &c., which is produced by the present method of millering, will no longer be an article of commerce. But, as a set-off, the pellicle which is produced by the new system is found to make an excellent vellum-like paper, which is largely sought after in France by bookbinders.

The above is based partly on personal observation and examina-

tion, and partly from written communications from M. Poissant, whose whole life nearly has been devoted to this subject.—C. DAVISON, C.E., at the *British Association*; from *Am. Drug. Circular*.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, MAY 19, 1864.

ANNUAL REPORT OF THE SURGEON-GENERAL OF MASSACHUSETTS.—The bulky volume bearing the name of the Report of the Adjutant General of the State of Massachusetts, contains, as usual, the report of the Surgeon-General of the State. This is an important annual record of matters pertaining to the medical staff of our soldiers in the army of the United States, and of what has been done and is now doing by the State for the sanitary welfare of our troops. Every year makes it the more evident that the office of Surgeon-General is a very important auxiliary to the Executive department, and that without it there would be a load of anxiety weighing on the hearts of our people, which would add tenfold to the unavoidable sufferings of the war. The simple fact that a full account is kept by him of the location of all our soldiers, that their friends can always get at his office information of the condition or fate of those in the Government hospitals, is in itself enough to make this office one of immense public benefit. Certain we are that the information which is thus daily given by the faithful incumbent, with that kindly urbanity of manner which is so strikingly characteristic of him, diffuses a sunshine of hope and patience over countless homes, which would otherwise be darkened by gloomy forebodings as to the uncertain fate of those whom they have sent to the war. As may be supposed, the amount of work necessary to keeping up a constant supply of information of such a personal character is very great, and we find that with this and the other matters of the office the amount of business done increases with each year. The Surgeon-General is the agent through whom the friends of sick and wounded soldiers make application to Government for discharges, furloughs and transfers; and the correspondence growing out of this must be enormous. It has also been his duty during the past year to take part in the examination of candidates for the office of surgeon in the colored regiments organized in the State, as well as to pronounce on the physical fitness of drafted men in camp at Long Island. Thus it is very plain that the office of Surgeon-General is far from being a sinecure.

We have in the report before us all the changes that have been made in the Medical Staff of Massachusetts regiments in the field during the past year, with a list of the medical officers in the veteran regiments now organizing. We find, also, kindly tributes to the memory of those members of it who have lost their lives in the service during the year.

Considerable space is given in this report to the subject of the colored regiments, of which the first raised by State authority was recruited in Massachusetts. Of these the Surgeon-General speaks in the

most favorable terms. We cannot do better than to quote his own language:—

"As this movement was considered by many who had always been friends of the colored race, as an experiment, whilst by others it was derided and pronounced impracticable, it became a matter of great moment that it should be inaugurated under the most favorable circumstances. Fortunately, your Excellency, it was commenced, carried on and consummated by those who unflinchingly believed in its success, and in the importance of giving this race an opportunity to vindicate their right to freedom by fighting for it.

"There were medical men attached to the staff of our regiments in the field, of large experience and ability, gentlemen by education and social position, who coveted the honor of assisting in the solution of this question; and when the selection of a surgeon was made for the Fifty-Fourth Regiment, he gave to the movement an energetic, zealous and conscientious coöperation worthy of all praise.* The first recruits were sent to Camp Meigs, Readville, in February, 1863; their medical examination was most rigid and thorough, nearly one third of the number offered being peremptorily rejected; as a consequence, a more robust, strong and healthy set of men were never mustered into the service of the United States. Going into camp in the winter and spring months, there was a moderate amount of sickness, principally pneumonia and bronchitis, and there were a few deaths from these diseases. The hospital accommodations were, however, good, and the rations furnished the men were ample and well prepared. From the outset, the regiment showed great interest in drilling, and on guard duty it was always active and vigilant. The barracks, cook-houses and hospital presented a remarkably neat appearance; indeed, the kitchens far surpassed in cleanliness any I have ever seen, and were models of neatness and good order. The cooks, however, had many of them been in similar employments in other places, and had therefore brought some skill to their present responsibility.

"In camp, these soldiers presented a buoyant cheerfulness and hilarity which impressed me with the idea that the monotony of their ordinary duties would not dampen their feelings of contentment, if they were well cared for. On parade, their appearance was marked by great neatness of personal appearance, as concerned dress and the good condition in which their arms and accoutrements were kept. Their habits being imitative, it was natural that they should be punctilious in matters of military etiquette, and such observances as the well-disciplined soldier, in his subordinate position, pays to his superior. And, fortunately for them, they had the teachings of those who were thoroughly imbued with the importance of their trusts, but were gentlemen, as well as good soldiers.

"It was remarked that there was less drunkenness in this regiment than in any other that had ever left Massachusetts, but this might have been owing to the fact that the bounty was not paid them until a day or two previous to their departure; nevertheless, it is my dispassionate and honest conviction that no regiments were ever more amenable to good discipline, or were more decorous and proper in their behavior, than the Fifty-Fourth and Fifty-Fifth Massachusetts Colored Volunteers.

* Surgeon Lincoln R. Stone, Second Massachusetts Volunteers, now Surgeon U. S. Vols.

"Probably no prejudice ever vanished more quickly than did the deep-seated one, that these men were capable of no higher mission than that which their long condition of servitude had imposed upon them. * * * * *

"Few regiments have had such a hard introduction to service as this command, and none have borne its hardships more cheerfully or uncomplainingly. Their power to endure fatigue and hardship has been well tested on the battle-field, in the trench, and in other positions where physical endurance was necessary to success. On this point, the opinion of those best able to judge, and whose observations entitle their opinions to great weight, has been that there is no difference between colored and white troops in capacity to become good soldiers.

"For a week after the assault upon Battery Wagner, they were constantly at work, entirely without shelter, many of them wounded, bruised or maimed—yet there was no complaining or murmuring.

"The returns of the surgeon in charge show that there is little difference in their diseases from those which attack the white man, though it is a well-established fact that they are less susceptible to the influences of malaria, and more prone to attacks of pulmonary diseases;—whilst their courage in the field, and powers of endurance in the trench are well established. On the other hand, they seem to be more dependent upon their officers than the white regiments, and are imprudent, thoughtless or careless in matters pertaining to their sanitary condition. In health they are cheerful and hopeful, in disease melancholy and despondent, and do not rally from the grave forms of disease so readily as the white race. These peculiarities may be the result of their long condition of servitude, or the consciousness that they have always been regarded as mentally and physically inferior. Yet the difference between the Fifty-Fourth Massachusetts Colored Volunteers, recruited North, and colored regiments raised South, was very great, and more strongly marked than any characterizing white soldiers as compared with black. The blacks born and recruited South having just emerged from the condition of servitude imposed on them since birth, are far more dependent than the colored regiments recruited North, showing that the further this race has been removed from the depressing influences of slavery, the closer has been their approximation to the whites in their physical development and capacity for becoming enduring soldiers."

The report concludes with a handsome recognition of the indebtedness of the State to the Medical Commission, as follows:—

"If Massachusetts, in the character of her Medical Staff, does not suffer by comparison with other States, it is owing to the high stand taken by this Commission in the examination of candidates, and in other matters pertaining to the usefulness and welfare of the profession, in all of which it has been ably seconded by your Excellency, in whose appointments and promotions no other question has been allowed to enter than that of professional qualification, integrity of character, faithfulness and meritorious service."

MESSRS. EDITORS,—I propose to enlighten the medical profession of the "hub of the Universe" relative to the doings of their brethren in

the quiet City of Brotherly Love. Perhaps some among you may still hold pleasant remembrances of the "Old University" and "the Jeff.," and the rectangular streets and plain brick houses "all in a row" of our "Quaker City."

Medically, we should be rather grave than gay, as we have just lost three prominent physicians, and we know not when others may follow. Dr. Robert P. Thomas, Professor of *Materia Medica* in the College of Pharmacy, a learned, courteous and excellent gentleman; Dr. Franklin Bache, Professor of Chemistry in the Jefferson School, and Dr. John Redman Coxe, formerly so well known by his connection with the University, have all been swept away within a few weeks. The former, in the prime of life, with the strongest expectations of a long and useful career, was attacked with "cerebro-spinal meningitis," and died on the third day. Dr. Bache, though quite advanced in years, was yet apparently strong; while Dr. Coxe, at the age of 91, died, worn out—the wheels of life could run no longer.

Our city is healthy, though the "spotted fever," so called, in the absence of a determined name, still is occasionally seen. It has had a harvest, though by no means confined to the city, as we hear of it almost everywhere. Of variola and rubeola we have had many cases, not many fatal; the epidemic of these cutaneous affections has been extended, though not virulent. Consumption, the great "American disease," is on the increase, and it would be an interesting and valuable matter to determine how many of these cases occur in the native born. I believe that two thirds, at least, would be found among our immigrant population, and particularly the Celtic race.

During the past campaign our schools have been active, and in a degree approached their old proportions in regard to the size of their classes and the number of their graduates. Perhaps, some day, I may give a more extended account of them, their Professors, history, &c.

Our military hospitals, though at one time, spite of their ample proportions, filled to overflowing, at present exhibit an array of empty beds. God grant that they may not be much longer required, and may He hasten the day when we may once more see the "old flag" waving in every breeze all over the American continent, with "none to molest."

Yours, &c.,

N.

Philadelphia, April, 1864.

DEATH FROM CHLOROFORM, IN SAN FRANCISCO.—Mrs. ———, a native of California, of highly nervous temperament, was placed in the operating chair to have a tooth extracted. She was in great dread of the instruments, and while much excited from this cause, the chloroform was administered, by holding the napkin above and near the nostrils. She had some difficulty in managing the respiration, and, after inhaling it imperfectly a short time, complained that she could not take it, and seized the hand of the operator, removing it from her face. Without using the chloroform any longer, her hands were held by an assistant, and the tooth extracted without difficulty. Immediately after the withdrawal of the forceps from her mouth, her jaws were clenched and her head thrown back, by spasmodic contraction of the muscles. The breathing was arrested, the face grew livid, and death rapidly ensued. The immediate cause of death appears to have been apnoea,

from the spasmodic closure of the glottis or larynx. The masseter, respiratory and spinal muscles, and also the flexors of the extremities, continued in a state of tonic spasm till relaxed by death. We are satisfied that there was no mismanagement of the chloroform in this case—unless to use it at all be mismanagement. There is quite as much reason to allege that it was not pushed far enough, as that it was pushed too far. Possibly a longer inhalation would have carried the patient safely beyond the range of spasm, and into the tranquil region of anaesthesia. There was no disease of the heart or other organs to discourage the use of the agent.—*San Francisco Med. Press.*

CHRONIC ULCERS.—Dr. Skey says, "I have treated a large number of these affections, and with success. The more chronic the ulcer, the larger its size, the more aged the subject, the more remarkable is the influence of opium in effecting its cure. Let a case be selected for experiment, of some twenty years duration, which has exhausted the patience of various medical attendants, as well as the remedies employed by them for cure.

"Treat such a case of chronic ulcer, of the largest size, having a pale, flat, bloody base, a high mound lymphed around it, covered by healthy integument, the sore pouring out large quantities of watery ichor, saturating every covering. Select such a case occurring in old age: give such a person ten to fifteen drops of tincture of opium night and morning, leave the bowels alone, and observe the base of the sore in five or six days: it will exhibit a number of minute red points, which, daily increasing in number, will rise up in the form and identity of healthy granulations, and cover the entire surface of the ulcer;" and at the same time the base is becoming elevated, the margin becomes depressed, and the process of cicatrization is commenced.

"No injury to the constitution attaches to the use of this remedy, its salutary action upon the ulcer is obtained solely through the healthy influence it exercises upon the constitution."—*London Lancet.*

THERE are a large number of vacancies existing in the Corps of Surgeons and Assistant Surgeons of Volunteers.

VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, MAY 14th, 1864.

DEATHS.

	Males.	Females.	Total.
Deaths during the week	33	32	65
Ave. mortality of corresponding weeks for ten years, 1853—1863,	34.3	36.7	71.0
Average corrected to increased population	00	00	78.03
Death of persons above 90	0	0	0

DIED.—At Concord, N. H., 29th ult., Thomas Chadbourne, M.D., 74.

DEATHS IN BOSTON for the week ending Saturday noon, May 14th, 65. Males, 33—Females, 32.—Accident, 2—asphyxia, 1—asthma, 1—congestion of the brain, 1—disease of the brain, 3—inflammation of the brain, 1—bronchitis, 1—cancer, 2—consumption, 11—convulsions, 1—diarrhoea, 1—dropsy, 1—dropsy of the brain, 1—erysipelas, 1—scarlet fever, 4—disease of the heart, 4—infantile disease, 1—congestion of the lungs, 3—inflammation of the lungs, 6—measles, 2—smallpox, 7—teething, 1—wound (pistol), 1—unknown, 8.

Under 5 years of age, 22—between 5 and 20 years, 13—between 20 and 40 years, 12—between 40 and 60 years, 11—above 60 years, 7. Born in the United States, 47—Ireland, 12—other places, 6.